CALFED
BAY-DELTA
PROGRAM

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Memorandum

Date: January 18, 2000

To: CALFED Policy Group

From: Steven R. Ritchie
Acting Executive Director

Subject: WMS/ISI Report Summaries

Six reports dealing with CALFED Water Management Strategy and Integrated Storage Investigation issues were completed in December 1999. Summaries of the reports are provided below:

Hydroelectric Facility Reoperation Investigation

Goal: Evaluate the potential for reoperation of PG&E hydroelectric facilities to help meet CALFED objectives.

Discussion: About one-half of total storage capacity of PG&E facilities is in Lake Almanor. This study considered reoperation of Almanor directly and extrapolated conclusions for remainder of PG&E facilities. The study dealt only with physical reoperation - it did not consider institutional issues. The study considered three goals for reoperation:

1) Increase CALFED system-wide water reliability
2) Changes in timing of flows for environmental enhancement
3) Local water supply reliability

Findings:

- PG&E reservoirs are operated similarly to typical water supply reservoirs
- Downstream storage dampens potential system-wide benefits of reoperation
- Local water supply improvements -- 20 to 40 TAF
- Delta export water supply improvements -- 20 to 40 TAF
- Ecosystem benefit - changing timing of flows to spring -- 60 to 80 TAF

Flow Regime Requirements for Habitat Restoration along the Sacramento River Between Colusa and Red Bluff

Goal: Outline long-term studies to address the flow regime requirements for riparian habitat restoration along the Sacramento River between Colusa and Red Bluff and provide some initial guidelines for potential diversions to offstream storage.

Discussion: Core Team led by Matt Kondolf of UC Berkeley conducted research and produced a draft white paper. Draft was reviewed by an expert panel, leading to this final white paper. Study deals with channel migration and related habitat issues. Study does not consider direct flow needs for fisheries. Lack of data and scientific uncertainty hinders conclusiveness of findings. Additional work is recommended.

Findings: Flows between 55,000 and 80,000 cfs are critical for channel migration. Storage operations should be designed to not decrease the frequency-duration of flows in this range. These recommendations are intended for initial feasibility study of offstream storage only. Additional monitoring, field work, and research are recommended for two-year and long-term time frames.

Drinking Water Quality Operations Studies

Goal: Evaluate potential for drinking water quality improvements through operation of new storage facilities.

Discussion: Best Delta water quality typically occurs during high outflow months of April through July. Fishery concerns have shifted more exports to lower-quality fall months. Storage can provide additional system operational flexibility to improve export water quality through:

1 Outflow management - using upstream of Delta reservoir releases to increase Delta outflow in fall months to improve Delta water quality, and

2) Export management - selectively exporting during improved water quality periods and relying on south of Delta storage releases to meet water supply needs.

Findings: Two base studies were used representing CALFED's preferred alternative without new storage; one without a Hood to Mokelumne diversion and a second with a 4,000 cfs Hood to Mokelumne diversion. For each of these base studies, operations of 1) 2 MAF of new offstream storage upstream of the Delta and 2) 1 MAF of new south of Delta off-aqueduct storage for drinking water quality improvement were considered. In each case, water supply reliability was not allowed to decrease below the reliability provided without the new storage facilities. Study results indicate that with either new storage facility in place, reduction in peak concentrations of bromide and salinity in the south Delta in fall months could be as much as 30 to 50 percent in many years, including the driest years.

Export Operations Flexibility Analysis

Goal: Evaluate potential for new storage and conveyance facilities, demand reduction measures, and flexible application of the export/inflow ratio standard to contribute to system operational flexibility.

Discussion: Monthly schedules of Delta export curtailments (total project export capacity reduced to 2,250 cfs) that would reduce fish entrainment were developed. Water management actions were simulated with these schedules superimposed on other operational rules. Using this approach, the number of days of potential export curtailment provided by a water management action while maintaining a base water supply reliability could be estimated.

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Findings: All findings assume projected 2020 demands for Bay-Delta supplies, existing Bay-Delta standards, and a number of external operational assumptions not listed here.

1) Demand Reduction Measures. Water management actions that would reduce projected 2020 Bay-Delta demands by about .6 MAF would allow approximately 20 additional days of export curtailment in above normal and below normal years.
2) South Delta Conveyance Improvements. Increasing Banks Pumping Plant capacity to 10,300 cfs and allowing joint point of diversions for the SWP and CVP would allow about 30 to 40 additional days of export curtailment in wet and above normal years.
3) New Storage. 2 MAF of new offstream storage upstream of the Delta would provide additional operational flexibility in all year types. Flexibility would be particularly improved in below normal years (about 30 additional days of export curtailment), dry years (about 30 additional days of export curtailment) and critical years (about 90 additional days of export curtailment).

Conjunctive Use Site Assessment

Goal: Develop a preliminary list of conjunctive use sites, including estimates of operational characteristics and costs, for use in subsequent CALFED water management strategy evaluations.

Discussion and Findings: Working from previously developed information, a workgroup selected 9 potential conjunctive use sites for analysis. While this list is not intended as a catalog of all potential conjunctive use sites in California, it does include the sites considered most feasible by the workgroup. Storage capacity and recharge and recovery rates were estimated for all 9 sites. The implementability of the sites was considered and judgement was used to further screen the sites for initial analysis in the CALFED Water Management Strategy Evaluation Framework. One north of Delta site with 500 TAF of storage capacity and 4 south of Delta sites with 1.8 MAF total storage capacity were selected. Total capital and annual costs were developed for these projects. This information will be incorporated in the initial alternatives under consideration in the Water Management Strategy Evaluation Framework.

Initial Surface Water Storage Screening

Goal: Document an initial screening of potential surface water storage facilities that could be implemented to help achieve CALFED objectives.

Discussion and Findings: An initial inventory of 52 potential reservoir sites was previously developed, based on review of reports completed over the past 40 years. Sites were eliminated based upon 1) minimum capacity and 2) conflict with CALFED objectives, solution principles, or policy. Reasoning is documented for each eliminated site. Twelve surface storage sites are retained for further consideration.

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